PIP ELIGD000
Grounding Installation Details
PURPOSE AND USE OF PROCESS INDUSTRY PRACTICES

In an effort to minimize the cost of process industry facilities, this Practice has been prepared from the technical requirements in the existing standards of major industrial users, contractors, or standards organizations. By harmonizing these technical requirements into a single set of Practices, administrative, application, and engineering costs to both the purchaser and the manufacturer should be reduced. While this Practice is expected to incorporate the majority of requirements of most users, individual applications may involve requirements that will be appended to and take precedence over this Practice. Determinations concerning fitness for purpose and particular matters or application of the Practice to particular project or engineering situations should not be made solely on information contained in these materials. The use of trade names from time to time should not be viewed as an expression of preference but rather recognized as normal usage in the trade. Other brands having the same specifications are equally correct and may be substituted for those named. All Practices or guidelines are intended to be consistent with applicable laws and regulations including OSHA requirements. To the extent these Practices or guidelines should conflict with OSHA or other applicable laws or regulations, such laws or regulations must be followed. Consult an appropriate professional before applying or acting on any material contained in or suggested by the Practice.

This Practice is subject to revision at any time.

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1. **Scope**

The purpose of this Practice is to provide the typical details for construction of grounding systems in chemical and refining facilities. The bonding and grounding design and installation shall be in accordance with the *National Electrical Code*.

These installation details include power system and equipment grounding, static grounding protection for equipment in classified locations, grounding electrode connections, and step and touch potential grounding.

Not included in the scope of this Practice are computer and control system grounding and cathodic protection.

2. **References**

Applicable requirements in the latest edition (or the edition indicated) of the following industry codes, standards, and references shall be considered an integral part of this Practice.

**Industry Codes and Standards**

- National Fire Prevention Association (NFPA)
  - NFPA 70 - *National Electrical Code (NEC)*
  - NFPA 780 – *Standard for the Installation of Lightning Protection Systems*

3. **General Information**

3.1 **Category Index**

<table>
<thead>
<tr>
<th>Detail Number</th>
<th>Grounding Detail Category</th>
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<tbody>
<tr>
<td>ELIGD060 – ELIGD099</td>
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<td>Fences</td>
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<td>ELIGD650 – ELIGD699</td>
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3.2 **Basic Assumptions and Applications**

- All grounding connections, bolted, compression, or exothermic weld, shall be in accordance with manufacturers instructions and listed for grounding service.
- All connections shall be coated with an anti-oxidant compound.
c. Paint or other non-conductive coating shall be removed at the point of contact.

d. Refer to the grounding plan for grounding and bonding conductor type, size, insulation, etc.

e. Unless identified on the grounding detail, refer to the grounding plans for mounting heights, burial depths, and spacing requirements.

f. Refer to NFPA 780 for lightning protection details.

3.3 User Guidance

The details are intended to convey general concepts of desired grounding installations. In most cases, they are generic with regard to wire sizes. The details may be used “as is,” with specific sizes and part numbers specified elsewhere, or may be copied and customized as appropriate for a specific installation.

When the details are customized for a specific installation the title block can be modified to add project reference information, and the applicable sizes and part numbers can be added to the bill of materials table on each detail. When the details are so modified, PIP requires that the PIP logo and all references to PIP be deleted from the detail. PIP’s intent is to prevent modification of these details through both the software used, when practical, and through exercise of its copyright control of the use of the documents.
NOTES:

1. ALL CONNECTIONS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. PAINT OR OTHER NON-CONDUCTIVE COATING SHALL BE REMOVED AT THE POINT OF CONTACT, OR A FASTENER THAT WILL PENETrATE THE COATING SHALL BE USED.
3. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
4. REFER TO TEXT PORTION OF ELIGD0000 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.

---

PROCESS INDUSTRY PRACTICES
FABRICATION/INSTALLATION DETAILS

GROUNDING DETAIL
BUILDINGS
BOLTED COMPRESSION CONNECTION TO BUILDING COLUMN
### PROCESS INDUSTRY PRACTICES

#### FABRICATION/INSTALLATION DETAILS

**GROUNDING DETAIL**

**BUILDINGS**

**EXOTHERMIC WELD CONNECTION TO BUILDING COLUMN**

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<tr>
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<td>FT</td>
<td>1&quot;</td>
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**NOTES:**

1. ALL CONNECTIONS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. PAINT OR OTHER NON-CONDUCTIVE COATING SHALL BE REMOVED AT THE POINT OF CONTACT, OR A FASTENER THAT WILL PENETRATE THE COATING SHALL BE USED.
3. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
4. REFER TO TEXT PORTION OF ELIG0000 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.
NOTES:
1. ALL CONNECTIONS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. PAINT OR OTHER NON-CONDUCTIVE COATING SHALL BE REMOVED AT THE POINT OF CONTACT, OR A FASTENER THAT WILL PENETRATE THE COATING SHALL BE USED.
3. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
4. REFER TO TEXT PORTION OF ELIGD000 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.

PROCESS INDUSTRY PRACTICES
FABRICATION/INSTALLATION DETAILS
GROUNDING DETAIL
BUILDINGS
BOLTED COMPRESSION CONNECTION WITH TAB WELDED TO COLUMN

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<tr>
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<td>WASHER, FLAT</td>
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<td>ANGLE, STEEL, 2&quot; x 2&quot; x 1/4&quot; WITH 7/16&quot; HOLE, LENGTH AS INDICATED</td>
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NOTES:
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PROCESS INDUSTRY PRACTICES

FABRICATION/INSTALLATION DETAILS

GROUNDING DETAIL

BUILDINGS

EQUIPMENT GROUNDING PAD

SET IN CONCRETE
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<td>WASHER, LOCK</td>
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NOTES:
1. PAINT OR OTHER NON-CONDUCTIVE COATING SHALL BE REMOVED AT THE POINT OF CONTACT, OR A FASTENER THAT WILL PENETRATE THE COATING SHALL BE USED.
2. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
3. REFER TO TEXT PORTION OF ELIGD101 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.

PROCESS INDUSTRY PRACTICES
FABRICATION/INSTALLATION DETAILS
GROUNDING DETAIL
STRUCTURAL COLUMNS
NON-FIREPROOFED
RISER WITH CRIMPED CONNECTION
NOTES:
1. ALL CONNECTIONS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. PAINT OR OTHER NON-CONDUCTIVE COATING SHALL BE REMOVED AT THE POINT OF CONTACT, OR A FASTENER THAT WILL PENETRATE THE COATING SHALL BE USED.
3. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
4. REFER TO TEXT PORTION OF ELIGD000 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.

PROCESS INDUSTRY PRACTICES
FABRICATION/INSTALLATION DETAILS
GROUNDING DETAIL
STRUCTURAL COLUMNS
NON-FIREPROOFED
RISE WITH BOLTED COMPRESSION CONNECTION

PRACTICE REF: ELIGD000
PAGE 1 OF 1
DRAWING DATE: 05/18
ELIGD113
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**NOTES:**

1. ALL CONNECTIONS SHALL BE IN ACCORDANCE WITH MANUFACTURER’S INSTRUCTIONS.
2. PAINT OR OTHER NON-CONDUCTIVE COATING SHALL BE REMOVED AT THE POINT OF CONTACT, OR A FASTENER THAT WILL PENETRATE THE COATING SHALL BE USED.
3. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
4. REFER TO TEXT PORTION OF ELIG0000 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.
NOTES:
1. ALL CONNECTIONS SHALL BE IN ACCORDANCE WITH MANUFACTURER’S INSTRUCTIONS.
2. PAINT OR OTHER NON-CONDUCTIVE COATING SHALL BE REMOVED AT THE POINT OF CONTACT, OR A FASTENER THAT WILL PENETRATE THE COATING SHALL BE USED.
3. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
4. REFER TO TEXT PORTION OF ELIG0000 FOR BASIC Assumptions AND APPLICATION OF THIS DETAIL.
5. ATTACHED BAR (ITEM 10) TO COLUMN BEFORE FIREPROOFING.
NOTES:
1. BOLTS SHALL BE INSERTED FROM INSIDE THE TRAY.
2. ALL CONNECTIONS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
3. PAINT OR OTHER NON-CONDUCTIVE COATING SHALL BE REMOVED AT THE POINT OF CONTACT, OR A FASTENER THAT WILL PENETRATE THE COATING SHALL BE USED.
4. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
5. USE MATERIALS NOT SUBJECT TO CORROSION FROM THE ENVIRONMENT OR APPLICATION.
6. REFER TO TEXT PORTION OF ELIG0000 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.

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PROCESS INDUSTRY PRACTICES
FABRICATION/INSTALLATION DETAILS

GROUNDING DETAIL
CABLE TRAY
BONDING OF CHANNEL TO TRAY
NOTES:
1. BOLTS SHALL BE INSERTED FROM INSIDE THE TRAY.
2. ALL CONNECTIONS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
3. PAINT OR OTHER NON-CONDUCTIVE COATING SHALL BE REMOVED AT THE POINT OF CONTACT, OR A FASTENER THAT WILL PENETRATE THE COATING SHALL BE USED.
4. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
5. USE MATERIALS NOT SUBJECT TO CORROSION FROM THE ENVIRONMENT OR APPLICATION.
6. REFER TO TEXT PORTION OF ELI60000 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.

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<td>BOLT, CARRIAGE HEAD, KNUREALED SHOULDER</td>
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<td>3/8&quot; - 16</td>
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### PROCESS INDUSTRY PRACTICES

**FABRICATION/INSTALLATION DETAILS**

**GROUNDING DETAIL**

**CABLE TRAY**

**CONDUIT BONDED TO CABLE TRAY BY CONDUIT CLAMP**

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<td>2</td>
<td>1</td>
<td>E4</td>
<td>A/R</td>
<td>CLAMP, CONDUIT, APPROVED GROUNDING</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**

1. DIMENSION SHALL BE KEPT TO A MINIMUM, ALLOWING THE BUSHING TO CLEAR THE CABLE TRAY RAIL.
2. ALL CONNECTIONS SHALL BE IN ACCORDANCE WITH MANUFACTURER’S INSTRUCTIONS.
3. PAINT OR OTHER NON-CONDUCTIVE COATING SHALL BE REMOVED AT THE POINT OF CONTACT, OR A FASTENER THAT WILL PENETRATE THE COATING SHALL BE USED.
4. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
5. USE MATERIALS NOT SUBJECT TO CORROSION FROM THE ENVIRONMENT OR APPLICATION.
6. REFER TO TEXT PORTION OF ELIG0000 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.
NOTES:
1. BOLTS SHALL BE INSERTED FROM INSIDE THE TRAY.
2. ALL CONNECTIONS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
3. PAINT OR OTHER NON-CONDUCTIVE COATING SHALL BE REMOVED AT THE POINT OF CONTACT, OR A FASTENER THAT WILL PENETRATE THE COATING SHALL BE USED.
4. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
5. USE MATERIALS NOT SUBJECT TO CORROSION FROM THE ENVIRONMENT OR APPLICATION.
6. REFER TO TEXT PORTION OF ELIGD219 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.

PROCESS INDUSTRY PRACTICES
FABRICATION/INSTALLATION DETAILS
GROUNDING DETAIL
CABLE TRAY
CONDUIT BONDED TO CABLE TRAY
WITH GROUNDING BUSHING AND CABLE
NOTES:
1. BOLTS SHALL BE INSERTED FROM INSIDE THE TRAY.
2. ALL CONNECTIONS SHALL BE IN ACCORDANCE WITH MANUFACTURER’S INSTRUCTIONS.
3. PAINT OR OTHER NON-CONDUCTIVE COATING SHALL BE REMOVED AT THE POINT OF CONTACT, OR A FASTENER THAT WILL PENETRATE THE COATING SHALL BE USED.
4. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
5. USE MATERIALS NOT SUBJECT TO CORROSION FROM THE ENVIRONMENT OR APPLICATION.
6. SLACK SHALL BE PROVIDED IN ITEM 1 TO ALLOW FOR TRAY EXPANSION, AS DEFINED BY NEMA V20, CABLE TRAY INSTALLATION GUIDELINES.
7. REFER TO TEXT PORTION OF ELIG0000 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.

PROCESS INDUSTRY PRACTICES

FABRICATION/INSTALLATION DETAILS

GROUNDING DETAIL
CABLE TRAY
BONDING ACROSS EXPANSION OR
ADJUSTABLE SPlice PLATE WITH CABLE
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<tr>
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<td>1/4&quot;-20 x 1&quot;</td>
<td>BOLT, HEX HEAD</td>
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<tr>
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<td>EA</td>
<td>1/4&quot;-20</td>
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<tr>
<td>9</td>
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<td>EA</td>
<td>1/4&quot;</td>
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NOTES:
1. ALL CONNECTIONS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. PAINT OR OTHER NON-COCONDUCTIVE COATING SHALL BE REMOVED AT THE POINT OF CONTACT, OR A FASTENER THAT WILL PENETRATE THE COATING SHALL BE USED.
3. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
4. REFER TO TEXT PORTION OF ELIGD250 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.
5. THIS DETAIL CAN BE APPLIED FOR MULTIPLE GROUND RISER CONNECTIONS TO A SINGLE POWER TRANSFORMER, ADJUST QUANTITIES AS NECESSARY AND SEE PLAN DRAWING FOR RISER LOCATIONS.
<table>
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**NOTES:**
1. ALL CONNECTIONS SHALL BE IN ACCORDANCE WITH MANUFACTURER’S INSTRUCTIONS.
2. PAINT OR OTHER NON-COCONDUCTIVE COATING SHALL BE REMOVED AT THE POINT OF CONTACT, OR A FASTENER THAT WILL PENETRATE THE COATING SHALL BE USED.
3. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
4. ONLY GROUNDING ELECTRODE CONDUCTOR CONNECTIONS ARE SHOWN. CURRENT CARRYING CONDUCTORS ARE NOT SHOWN.
5. REFER TO TEXT PORTION OF ELIGD257 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.

**PROCESS INDUSTRY PRACTICES**

**FABRICATION/INSTALLATION DETAILS**

**GROUNDING DETAIL**

**PANEL BOARD**

**WITH GROUNDING ELECTRODE CONNECTION AT PANEL**
NOTES:
1. ALL CONNECTIONS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. PAINT OR OTHER NON-CONDUCTIVE COATING SHALL BE REMOVED AT THE POINT OF CONTACT, OR A FASTENER THAT WILL PENETRATE THE COATING SHALL BE USED.
3. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
4. ONLY GROUNDING ELECTRODE CONDUCTOR CONNECTIONS ARE SHOWN. CURRENT CARRYING CONDUCTORS ARE NOT SHOWN.
5. REFER TO TEXT PORTION OF ELIGD259 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.

PROCESS INDUSTRY PRACTICES
FABRICATION/INSTALLATION DETAILS

GROUNDING DETAIL
SUBSTATIONS AND TRANSFORMERS
LIGHTING TRANSFORMER WITH GROUNDING ELECTRODE CONNECTION AT TRANSFORMER
### PROCESS INDUSTRY PRACTICES
#### FABRICATION/INSTALLATION DETAILS

![Diagram of Motor Connection Box]

**GROUNDING DETAIL**
- **MOTORS**
- **MOTOR BONDING RISER**

#### NOTES:
1. All connections shall be in accordance with manufacturer's instructions.
2. Paint or other non-conductive coating shall be removed at the point of contact, or a fastener that will penetrate the coating shall be used.
3. All connections shall be coated with anti-oxidant compound.
4. Refer to text portion of EL160000 for basic assumptions and application of this detail.
5. This detail can be applied for multiple ground riser connections to a single motor. Adjust quantities as necessary and see plan drawings for riser locations.

<table>
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<tr>
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<td>1</td>
<td>EA</td>
<td>1/4&quot; - 20</td>
<td>BOLT, HEX HEAD</td>
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<td>1</td>
<td>EA</td>
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<td>1</td>
<td>EA</td>
<td>1/4&quot;</td>
<td>WASHER, LOCK</td>
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### Alternate Feature

**Notes:**
1. All connections shall be coated with anti-oxidant compound.
2. Connector shall be installed with the manufacturer's recommended tool and die.
3. Refer to the grounding plan for wire type and minimum depth.
4. Refer to text portion of Elic0000 for basic assumptions and application of this detail.

### Process Industry Practices

**Fabrication/Installation Details**

**Grounding Detail**

**Earth Terminals**

Ground Rod to Cable Compression Connection
### ALTERNATE FEATURE

NOTES:
1. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
2. CONNECTOR SHALL BE INSTALLED PER MANUFACTURER’S INSTRUCTIONS.
3. REFER TO THE GROUNDING PLAN FOR WIRE TYPE AND MINIMUM DEPTH.
4. REFER TO TEXT PORTION OF ELIGD000 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.

### PROCESS INDUSTRY PRACTICES

### FABRICATION/INSTALLATION DETAILS

### GROUNDING DETAIL

#### EARTH TERMINALS

GROUNDA GIEN ROD TO CABLE
EXOTHERMIC WELD CONNECTION
NOTES:
1. ALL CONNECTIONS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
3. DIMENSIONS ARE APPROXIMATE.
4. REFER TO TEXT PORTION OF ELIGD0900 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.

A - ONE CONDUCTOR OPTION

B - TWO CONDUCTOR OPTION

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<td>3</td>
<td>3</td>
<td>FT</td>
<td>12&quot;</td>
<td>PIPE, PE, SCHEDULE 80 OR CONCRETE POLYMER ENCLOSURE SUITABLE FOR TRAFFIC AREA</td>
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<td></td>
<td>COVER, PROTECTIVE</td>
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## Process Industry Practices

**Fabrication/Installation Details**

**Grounding Detail**
- Earth Terminals
- Cable-to-Cable
- Compression Splice Connection

### Notes:
1. All connections shall be coated with anti-oxidant compound.
2. Connector shall be installed with manufacturer's recommended tool and die.
3. Refer to text portion of ELIG0000 for basic assumptions and application of this detail.

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<td>Connector, Compression, Splice</td>
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**Diagram:**
- Compression connection
- Stranded copper wire

---

**Drawing Details:**
- Page 1 of 1
- Drawing Date: 05/18
- ELIGD406
- Practice Ref: ELIG0000
EXOTHERMIC WELD CONNECTION

STRANDED COPPER WIRE

NOTES:
1. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
2. CONNECTOR SHALL BE INSTALLED PER MANUFACTURER’S INSTRUCTIONS.
3. REFER TO TEXT PORTION OF ELIG0000 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.

PROCESS INDUSTRY PRACTICES
FABRICATION/INSTALLATION DETAILS

GROUNDING DETAIL
EARTH TERMINALS
CABLE-TO-CABLE
EXOTHERMIC WELD SPLICE CONNECTION
NOTES:
1. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
2. CONNECTOR SHALL BE INSTALLED WITH MANUFACTURER'S RECOMMENDED TOOL AND DYE.
3. REFER TO TEXT PORTION OF ELIGD408 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.

PROCESS INDUSTRY PRACTICES
FABRICATION/INSTALLATION DETAILS

GROUNDING DETAIL
EARTH TERMINALS
CABLE-TO-CABLE
COMPRESSION TAP CONNECTION
NOTES:
1. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
2. CONNECTOR SHALL BE INSTALLED PER MANUFACTURER’S INSTRUCTIONS.
3. REFER TO TEXT PORTION OF ELIG0000 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.
NOTES:
1. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
2. CONNECTOR SHALL BE INSTALLED WITH MANUFACTURER'S RECOMMENDED TOOL AND DIE.
3. REFER TO TEXT PORTION OF ELIG0000 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.

PROCESS INDUSTRY PRACTICES
FABRICATION/INSTALLATION DETAILS
GROUNDING DETAIL
EARTH TERMINALS
CABLE-TO-CABLE
COMPRESSION CROSS CONNECTION
NOTES:
1. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
2. CONNECTOR SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS.
3. REFER TO TEXT PORTION OF ELIG0000 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.
NOTES:
1. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
2. CONNECTOR SHALL BE INSTALLED WITH MANUFACTURER'S RECOMMENDED TOOL AND DIE.
3. REFER TO TEXT PORTION OF EL160000 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.

PROCESS INDUSTRY PRACTICES
FABRICATION/INSTALLATION DETAILS

GROUNDING DETAIL
EARTH TERMINALS
CABLE-TO-REBAR
COMPRESSION CONNECTION
NOTES:
1. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
2. CONNECTOR SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS.
3. REFER TO TEXT PORTION OF ELIG0000 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.
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<tr>
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<td>6</td>
<td>EA</td>
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<td>6</td>
<td>EA</td>
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<td>NUT, HEX</td>
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**NOTES:**
1. ALL CONNECTIONS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. PAINT OR OTHER NON-CONDUCTIVE COATING SHALL BE REMOVED AT THE POINT OF CONTACT, OR A FASTENER THAT WILL PENETRATE THE COATING SHALL BE USED.
3. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
4. GROUND BUS SHOWN ON OUTSIDE OF FLANGE, IT MAY BE LOCATED ON INSIDE OF FLANGE.
5. REFER TO TEXT PORTION OF ELIGD450 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.
6. MAINTAIN MINIMUM SPACE FLANGE TO GROUND AT TWO INCHES.

**PROCESS INDUSTRY PRACTICES**

**FABRICATION/INSTALLATION DETAILS**

**GROUNDING DETAIL**

**GROUND BUS**
BAR ATTACHED TO STRUCTURAL STEEL NOT ISOLATED
### NOTES:

1. ALL CONNECTIONS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
3. REFER TO TEXT PORTION OF ELIG00000 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.
4. MAINTAIN MINIMUM SPACE GROUND BAR TO FLOOR AT SIX INCHES.
5. MAINTAIN MINIMUM SPACE GROUND BAR TO WALL AT TWO INCHES.

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</tbody>
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### PROCESS INDUSTRY PRACTICES

FABRICATION/INSTALLATION DETAILS

GROUNDING DETAIL

GROUND BUS

WALL MOUNTED GROUND BUS BAR

NOT ISOLATED
NOTES:
1. ALL CONNECTIONS SHALL BE IN ACCORDANCE WITH MANUFACTURER’S INSTRUCTIONS.
2. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
3. REFER TO TEXT PORTION OF ELIGD000 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.

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PROCESS INDUSTRY PRACTICES
FABRICATION/INSTALLATION DETAILS
GROUNDING DETAIL
GROUND BUS
MCC AND SWITCHGEAR GROUND RISER
NOTES:
1. ALL CONNECTIONS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
3. REFER TO TEXT PORTION OF ELGD4900 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.
4. MAINTAIN MINIMUM SPACE FLANGE TO GROUND BAR AT TWO INCHES.

PROCESS INDUSTRY PRACTICES

FABRICATION/INSTALLATION DETAILS

GROUNDING DETAIL
GROUND BUS
BAR ATTACHED TO STRUCTURAL STEEL
ISOLATED
CONCRETE WALL OR FOUNDATION

0'-1.1/2"  0'-0.11"

0'-1"  0'-1"

1/2"  1/2"

1'-0"

NOTES:
1. ALL CONNECTIONS SHALL BE IN ACCORDANCE WITH MANUFACTURER’S INSTRUCTIONS.
2. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
3. REFER TO TEXT PORTION OF ELIGD461 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.
4. MAINTAIN MINIMUM SPACE GROUND BAR TO FLOOR AT SIX INCHES.
5. MAINTAIN MINIMUM SPACE GROUND BAR TO WALL AT TWO INCHES.
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<td>EA</td>
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**NOTES:**
1. ALL CONNECTIONS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. PAINT OR OTHER NON-CONDUCTIVE COATING SHALL BE REMOVED AT THE POINT OF CONTACT, OR A FASTENER THAT WILL PENETRATE THE COATING SHALL BE USED.
3. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
4. REFER TO TEXT PORTION OF ELIGD500 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.
### Notes:
1. All connections shall be in accordance with manufacturer’s instructions.
2. All connections shall be coated with anti-oxidant compound.
3. Refer to text portion of ELIGD000 for basic assumptions and application of this detail.
4. Ground fence posts at 16'-0" intervals.

### Table: Grounding Detail

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**Process Industry Practices**

**Fabrication/Installation Details**

**Grounding Detail**

**Fences**

Fence post, fabric and barbed wire grounding.

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**Specifications:**

- **Drawing Date:** 05/10
- **Page:** 1
- **Reference:** ELIGD000
### NOTES:
1. ALL CONNECTIONS SHALL BE IN ACCORDANCE WITH MANUFACTURER’S INSTRUCTIONS.
2. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
3. REFER TO TEXT PORTION OF P1600000000 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.
4. GROUND EACH CORNER POST.

### PROCESS INDUSTRY PRACTICES

#### FABRICATION/INSTALLATION DETAILS

#### GROUNDING DETAIL

- **FENCES**
- **CORNER POST, FABRIC AND BARBED WIRE GROUNDING**

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### PROCESS INDUSTRY PRACTICES

#### FABRICATION/INSTALLATION DETAILS

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**NOTES:**

1. ALL CONNECTIONS SHALL BE IN ACCORDANCE WITH MANUFACTURER’S INSTRUCTIONS.
2. ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.
3. REFER TO TEXT PORTION OF ELIGD000 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.
4. GROUND EACH GATE.
1. Refer to text portion of ELIGD651 for basic assumptions and application of this detail.

NOTES:

PROCESS INDUSTRY PRACTICES
FABRICATION/INSTALLATION DETAILS
GROUNDING DETAIL
MISCELLANEOUS
COMPUTER FLOOR PEDESTAL

REMovable FLOOR TIlE

SQUARE OR ROUND PEDESTAL

WIRE, COPPER, STRANDED

ADJUSTMENT/LOCKING NUT

PEDESTAL SUPPORT BASE

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PART NO.
### PROCESS INDUSTRY PRACTICES

**FABRICATION/INSTALLATION DETAILS**

**GROUNDING DETAIL**

**MISCELLANEOUS**

**RAIL AND TANK TRUCK LOADING STATION**

---

**NOTES:**

1. **ALL CONNECTIONS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.**
2. **ALL CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT COMPOUND.**
3. **REFER TO TEXT PORTION OF ELIGD0000 FOR BASIC ASSUMPTIONS AND APPLICATION OF THIS DETAIL.**

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<td>LUG, 1 HOLE, STD - 1/2&quot; BOLT</td>
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<tr>
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**STEEL PIPE RACK SUPPORT**

**STRANDED COPPER CONDUCTOR**

**TO MAIN GROUND LOOP**

**CHANNEL OR 1" BEAM SUPPORT STEEL**

**#2 STRANDED COPPER CONDUCTOR TO MAIN GROUND LOOP**

**DETAIL A**

**DETAIL B**

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**DRAWING DATE:** 05/18

**PAGE 1 OF:** 1

**PART NO:** ELIGD661